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thor in Ohio, Wisconsin, Nebraska, Iowa and Dakota. Among cultivated species only those are admitted which are grown on account of useful qualities or are of wide distribution. It is remarked that the species introduced prior to the occupation of North America by Europeans are mainly of South American or West Indian origin. Those of more recent advent are mostly from Europe and Asia, rarely from Africa or Australia. In all 623 species, belonging to 353 genera are included. The *Gramineæ* are most numerous, 80 species being noted; there are 60 *Compositæ*, 48 *Leguminosæ*, and 39 *Labiatae*, 34 *Rosaceæ* and 30 *Cruciferae*. We have no exotic *Ericaceæ*, *Orchidæ* nor *Pteridophyta*. Europe has furnished 420 species, Asia 112, South and Central America and the West Indies 64, Africa 12, and Australia 1. 383 species are claimed to be spontaneous and the remainder, 240, cultivated. Herr Bruhin's list, while doubtless not quite complete, is of very great interest, and a valuable contribution to the literature of plant distribution.

Scribnaria. E. Hackel. (Botan. Gazette, xi., pp. 105, 106; one plate.)

A new genus of *Gramineæ* dedicated to Mr. F. Lamson Scribner of Washington, consisting of a single species, *S. Bolanderi*, Hackel, of California and Oregon, originally described by Dr. Thurber as *Lepturus Bolanderi*.

Thalictrum. Wm. Trelease. (Botan. Gazette, xi., pp. 92-93.)

Professor Trelease presents descriptions of *T. purpurascens*, L., and *T. polygalum*, Muhl., (*T. Cornuti* of Gray's Manual), giving the characters whereby he has been able to distinguish the two. He will be grateful for any specimens which will throw additional light on either of these species.

Western South America.—Notes on the Botany of. John Ball.

(Journ. Linn. Soc., xxii., pp. 137-168.)

Willoughby Lake, Vermont.—A Trip to. Walter Deane. (Botan. Gazette, xi., pp. 112-116.)

Botanical Notes.

Tiarella cordifolia has more than once been sent to us with somewhat attenuated and dentate or even lacinate petals, leading one to suspect a possible crossing with *Mitella diphylla*.

This is to ask those who meet with this anomaly to notice, where they meet with it, whether it occurs in more than single plants, and whether accompanied by the two plants.

ASA GRAY.

Note on Bahama Grass. It is generally believed in Jamaica that the Bahama Grass—*Cynodon Dactylon*—so common in all parts of the Island, even in the highest mountains, does not produce perfect seeds. This opinion has lately been demonstrated at the Government Cinchona Plantations as erroneous, for from ripe seed gathered there some time since, a large quantity of well developed seedlings have been raised. The planting of lawns with this grass has for a long time been a serious expense when the stolons or roots of the grass have to be dibbled in, but this can now be dispensed with, for in favorable weather on the plains, a lawn could be covered with this grass from seed in a very short time, and would certainly produce a turf more regular and permanent than that produced by planting tufts at regular intervals.

Sabal umbraculifera, Griseb. This palm is now recognized as being distinct from the Bermuda Palmetto, *Sabal Blackburniana*—*S. umbraculifera*, Mart., which is beautifully figured and described by W. B. Hemsley, Esq., A.L.S., in the Botany of the Voyage of the Challenger. The principal points of distinction appear to be in the size of the berries, those of *S. Blackburniana* being much larger than those of the Jamaica Palm. Grisebach appears to have adopted Martius' name in error, for the Jamaica species.

J. HART,

Supt. Govt. Cinchona Plantations.

Teratological. I have found in my yard a seedling plantlet of *Acer platanoides* with three cotyledons, and have a plant of *Podophyllum peltatum* which, instead of the usual flower-bud terminating the stem, has a minute erect leaf not peltate, as the normal ones are.

W. W. BAILEY.

Monstrosity in Iris. A new monstrosity observed in the flowers of the genus *Iris* by C. Massalongo. (Nuovo Giornale Botanico Italiano, xviii., pp. 155-156; plate X.) For two successive years a hybrid form has been found which is probably a cross between *Iris squalens* and *I. florentina*. Floral diagrams are given showing dimerous, trimerous, tetramerous and penta-

merous flowers, none of them however, entirely regular, as in two cases the petaloid styles are either lacking or unilaterally developed, and in the four and five-parted flowers two of the petals, in each are lacking, and the filaments united irregularly. The author hopes that these studies in teratology will throw light on the floral morphology of this genus, and perhaps, render more manifest its analogy with other families of the monocotyledons.

A Synopsis of the Rhizocarpeæ. In the April number of the Journal of Botany, Mr. J. G. Baker begins a synopsis of all known species of this interesting order of Pteridophytes; thirteen species of *Salvinia* are described, of which three are new to science. Of *Azolla*, five species are recognized, *A. Caroliniana* Willd., being the only one native to North America.

Researches on the cell-nucleus. Rev. W. H. Dallinger, LL.D., F. R.S. (Journal of the Royal Microscopical Society, vi., pp. 193-207. Plates vii-ix.) This adds another to the list of studies which have been carried on by means of the latest and most improved objectives and patient, long-continued observation. The organisms selected are *Heteromita rostrata*, *Polytoma uvella*, *Tetramitus rostratus*, and *Dallingeria Drysdali*, and of them Dr. Dallinger says:

"I know of no clear reason for concluding that they are either vegetable or animal; they possess in fact some of the characteristics of both, and certainly they represent the lowliest organization of either great line of organic life." The following conclusions were arrived at: "The nucleus is the centre of all the higher activities of these organisms. The spore or germ itself appears but an undeveloped nucleus; and when that nucleus has attained its full dimensions in size, there is a pause in growth in order that its internal development may be accomplished. Moreover it is from it that the flagella originally arise. In the same way it is by a complex and beautiful series of delicate activities in the nucleus that the wonderful act of fission is initiated, and in all probability carried to the end. So too, all the involved changes that go with fertilization and the production of germs are a series of correlated activities due, at the beginning at least, wholly to the nucleus."

A Summer course in botany is announced for the month of July at Cambridge, Mass. Prof. Goodale will give four morning lessons a week at the Botanic Garden on Morphology, based on Vol. I. of Gray's Text-book, and four afternoon lectures on Physiology, following Vol. II. Mr. F. L. Sargent will give instruction in Cryptogamic Botany five times a week.

Cross-fertilization of plants by birds. Fritz Müller. (Kosmos. 1886, i., 93-98.) A brief review is given in Science (Supplement, May 14th, 1886) illustrated by three figures of *Feijoa*, one of the genera of *Myrtaceæ*, and a native of South America. The highly modified petals are sweet and soft, very attractive to birds (*Thamnophilus*), which in reaching down to pick them off brush away the pollen from the erect stamens, and later dust the pistils of other blossoms with it.

Hibernation of Utricularia vulgaris and U. neglecta. A writer in the Gardener's Chronicle, vol. xxv., p. 556, describes certain phases in the life-history of these plants. He states that after having matured their growth in the autumn the tips of the stems exhibit a thickening which reaches the size of a pea or even a hazel nut. Later the whole plant sinks and dies, except these terminal buds, which now assume the appearance of small dark-colored balls, and, under a low magnifying power, are seen to consist of bulblets made up of the excessively shortened multifid leaves whose slender teeth give the little mass a bristly appearance, and probably protect it in a measure from small aquatic animals. After resting in this condition all winter, growth recommences in the spring, when the axis elongates, the leaves spread out, and the plant soon attains a considerable size. This mode of vegetative reproduction is evidently of great advantage to the Bladderworts, these terminal buds acting as a means of distribution, and the plants reaching a considerable size by their growth long before seeds could be produced.

The Relation between the "Bloom" on Leaves and the Distribution of the Stomata. Dr. Francis Darwin contributes to the Journal of the Linnæan Society, vol. xxii., pp. 99-116, a paper which gives some of the results obtained by his father and himself during an exhaustive study of this subject. It is found that

in leaves with no bloom on either surface there is a decided tendency towards the accumulation of stomata in the lower epidermis; in leaves with bloom on the lower surface only, which is thus protected from wetting, the tendency is even stronger in the same direction; in those which have bloom only on the upper surface, there appears to be an accumulation of stomata on this surface, but the few species examined render this somewhat untrustworthy as a general conclusion; leaves having bloom on both surfaces, sometimes have more stomata above than below, and sometimes the reverse is the case.

Proceedings of the Club.

The regular monthly meeting was held at Columbia College Tuesday evening, May 11. Dr. Newberry presided, and twenty-six persons were present. Miss Louise M. Stabler was elected active member and Miss Mary C. Cook corresponding member. Mr. E. E. Sterns distributed the title-page and prospectus of a catalogue of the plants of Manhattan Island, requesting the aid of the members in making it as complete as possible. Professor Schrenk exhibited a pod from a cleistogamous flower of *Viola cucullata*, in which sixty-six seeds had sprouted and the seedlings had attained the height of nearly two inches; when he pulled it up they still remained attached to the pod. He also read a list of thirty-three wild plants in his garden, among them *Dodecatheon Meadia* and *Isopyrum biternatum*. Professor Day read a list of additions to the Flora of Westchester County. Mr. Poggenburg read a list of fifty-seven plants collected on the 23d and 24th of April, and Mrs. Britton reported *Nuphar advea* in bloom on the 25th. She also exhibited an acorn of the white oak with four cotyledons and two radicles. Dr. Britton exhibited a series of specimens of *Populus grandidentata* and *P. heterophylla*, and read some notes on the differences in the leaves and nomenclature. Mr. P. H. Dudley read the paper announced for the evening on the formation of ducts in the chestnut, *Castanea vulgaris*, var. *Americana* DC., comparing them by means of wood sections and photo-micrographs with those of the Hemlock, *Tsuga Canadensis*, Carr., and the Larch, *Larix Americana*, Michx.